1. Motivation:

The number of missing people has greatly increased in the past few years. This has lead to it turning into a serious worldwide issue. Due to the rise of social media, information about missing people can be located quickly. Motivated by this promising way of solving the problem, we propose a novel solution regarding image retrieval, filtering and facial recognition.

Our proposed framework would lead to a significant increase in the sense of safety for the society. A decrease in kidnapping rate would be noticed, along with an increased belief in the Indian Police System.

2 Architecture:

The workflow of the architecture would be as follows:

- Capture or upload an image.

- Process the image captured.

- Apply facial recognition algorithm on the captured image, with the existing database of missing people. If found, extract further details about the person.

- Using twitter feeds, instagram search and google reverse image search to retrieve further similar images for extracting additional information of the missing person.

- To reduce the search space, we find the nearest ‘k’ neighbors on the above retrieved images for building the refined face database.

- Apply facial recognition on the refined face database.

Tools:

- Annoy Library.

- Selenium, Google-Image-Search, twitter-scraper, google-search libraries

- Facial Recognition library.

3. Input test cases:

1.)Capture/Upload an image. Output: Image Upload/Capture error.

2.) Capture/ Upload an image. Output: Match Found with details.

3.) Capture/Upload an image. Output: Match not found.

4.) Dataset.

NCRB Missing People Records. (2017, 2019): This dataset would be used to gather information about the captured image. If the captured image is found in the dataset, the scraping would also contain the extra information about the missing person.

5.) Virtual Computing Power:

Yes. Google Cloud VM would be used to perform scraping and recognition efficiently.

6.)Laptop Config:

Personal Machine:

- Dual Core, 2.8 Ghz i5 7th CPU.

- 128 GB SSD

- 8 GB memory.

- MacOs 10.15

VM:

-Hexa Core, 2.8 Ghz, Intel Xeon 6th Gen.

- 20 GB SSD.

- 30 GB memory.

- Ubuntu 18.04 LTS

7.)Synopsis:

The number of missing people has increased greatly in the past few years. Due to the recent advent of social media, information of missing people can be located with ease. The facial recognition challenge hopes to counter this rise. Our proposed solution to the challenge would follow a basic workflow. The user would upload or capture an image of a person. The captured image would be processed and provided as an input to the facial recognition algorithm, which would be performed on the existing database of missing people. If a match is found, additional information regarding the person would be extracted. Images similar to the provided image would be retrieved from the different web sources. The search space of the similar retrieved images would be reduced by using the ‘k’ nearest neighbors of the provided image w.r.t the search space to build the final refined database. Facial recognition algorithm would be applied on the refined database to check for matches. If a match is found, information regarding the source would be provided to the user.